



UNITED STATES NAVY

MEDICAL NEWS LETTER

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Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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Role of Tobacco in Disease

Paul S. Larson, Harvey B. Haag, and Herbert Silvette, Department of Pharmacology, Medical College of Virginia, Richmond, Va. Changing Concepts of the Role of Tobacco in the Management of Disease. Amer J Med Sci 240: 613-635, November 1960.

For almost as long as people have been using tobacco, writers have been speculating on its role in the genesis of disease; practicing physicians, governed empirically by their clinical experience, morally by their own feelings, or logically according to their premises, have been advising their patients to stop smoking, to cut down on their tobacco consumption, or even (in the old days when tobacco was considered to have therapeutic uses) to indulge. Except for a few genuinely tobaccogenic diseases (of which the most unequivocal is tobacco allergy), the etiologic role of tobacco is just as obscure today as, say, a century ago. However, a survey of a considerable sample of the clinical tobacco literature of the past 50 years has revealed a significant change in opinion regarding the place of tobacco in management of certain diseases. The latter is independent of speculation or opinion regarding tobacco etiology. With the probable sole exceptions of tobacco allergies and nicotine hypersensitiveness, observed influence of tobacco or tobacco-smoking on the course of any disease affords no valid information concerning its etiology.

Tobacco Allergy. The existence of a true allergy to tobacco appears to be indisputable, but its prevalence is difficult to determine perhaps because of its protean manifestations. To aid in diagnosis, allergy to tobacco might be considered a "clinical entity" of signs and symptoms which clear up completely on stopping smoking and which can be reproduced by smoking.

Tobacco Angina. It is far from clear whether tobacco angina is a disease, merely a set of signs and symptoms of nicotine hypersensitiveness, or tobacco allergy. In either case, by definition and diagnosis, the etiologic relationship of tobacco is evident; no doubt the proper management of this condition entails abstinence from its precipitating cause. Nevertheless, instances will arise where the physician must not be too dogmatic. In certain cases, the soothing effect of smoking may be of decided benefit, while its complete withdrawal with subsequent discomfiture may be fruitful of such emotional stress that the latter may in itself harbor the necessary element leading to an anginal attack.

Tobacco Amblyopia. Insofar as this disease is a true toxic amblyopia specifically due to tobacco, it would appear to follow that the use of tobacco should be forbidden. One cannot be sure whether withholding of tobacco in these cases represents specific or nonspecific treatment. So far as the well-being of the patient is concerned, however, the distinction is immaterial.

Cardiovascular Disease. Cardiovascular disease, like many other diseases and unlike the tobaccogenic diseases, is known to occur in

nonsmokers as well as in smokers. So the question of tobacco etiology does not arise, even as a prerequisite to discussion of management of the patient.

With respect to established cardiovascular disease, published opinion has varied from prohibition of smoking to allowing smoking if the patient is not sensitive to nicotine, with all shades of opinion in between. However, although the patient should be advised to stop smoking, cessation may result in the substitution of obesity, chronic anxiety, or other equally stressful reactions which the physician should try to prevent. It is well to emphasize that hypersensitivity to nicotine—no less than tobacco allergy—is a sound contraindication to smoking in any disease.

Hypertension. There is considerable opinion that tobacco is harmful in this condition. Owing to the great variation in the circulatory effects of smoking produced in different patients with arteriosclerosis and hypertension, it is generally considered that each case must be separately studied before giving rules for controlling the tobacco habit. Hyperreactors will show increased vasospasm—increased blood pressure and constriction of retinal arterioles. Such patients have everything to gain and nothing to lose by discontinuing the use of tobacco.

In a recent panel, de Takats advises against smoking in younger or middle-aged patients with hypertension who still have flexible vessels which respond to nicotine stimulation; but if there is diffuse arteriosclerosis in a patient who has smoked all his life and nicotine does not raise his blood pressure, the patient is not deprived of smoking. Another observer has suggested that most patients with essential hypertension refrain from smoking for a month; if these patients feel better and their blood pressure is lower, they will usually not want to start again. However, if the patient returns at the end of a month without having smoked and is obviously nervous and tense, he considers it much better for such patients to smoke as smoking apparently relieves some tension.

In this regard, Moyer has summed up his opinion: Because smoking frequently aggravates hypertension, the habit should be dispensed with if it can be done without excessive psychic trauma. The decision is thus an individual problem to be made by physician and patient together.

"Heart Disease." According to some writers, smoking must be forbidden in any type of heart disease. Sir Thomas Lewis thought it best that cardiac patients not smoke at all, but if they will smoke it must be done in strict moderation. This great authority pointed out that smoking is responsible in a very large number of its habitues for much strenuous coughing which is most injurious to many "heart cases." In this condition as in others, the emotional attitude must be considered. There are certain situations, of course, in which tobacco should be interdicted—congestive failure, acute myocardial infarction, and active rheumatic carditis.

Coronary-Artery Disease. Although some writers have stated that tobacco should be strictly forbidden to all patients with coronary symptoms

or disease, the majority of observers have been less dogmatic. In a report authorized for publication by the Council on Pharmacy and Chemistry of the American Medical Association, Ellis and Hancock (1957) stated that the attitude of physicians in regard to restricting the use of tobacco or alcohol by patients with coronary-artery disease was frequently determined more by the moral or personal attitude of the physician towards these substances than by rational medical standards. They noted that there is no evidence that tobacco does the circulation any good, but some evidence suggests that it may produce mildly deleterious effects. Nevertheless, the physician should evaluate very carefully how important it is to restrict the happiness of a patient who is already limited in so many ways. Yater thought that patients with known coronary-artery disease probably would do best not to smoke unless they are made quite unhappy by the restriction. In the latter case, heavy smoking, chain-smoking, and strong tobacco should be proscribed; nor should smoking be indulged in just before, during, or after effort.

Coronary Arteriosclerosis. In this condition as in many others, individual evaluation plays an important part. The physician should carefully evaluate the importance of restricting tobacco in a person who is already limited in so many ways.

Angina Pectoris. Some patients with angina pectoris can smoke with impunity; therefore, most clinicians consider that this, again, is a matter for individual appraisal and consideration. The opinion of R. L. Levy (1934) seems to summarize the general attitude toward tobacco: "In general, patients with angina pain are better off without it. For many, it is a poison and its use results in increase in the frequency and severity of attacks. There are those, however, who derive real comfort and emotional stability from smoking. In them, curtailment is urged and the denicotinized cigars and cigarettes may be tried."

According to Master (1956), the view is no longer accepted that alcohol and tobacco in combination are good (alcohol dilating, tobacco constricting the coronary vessels); it is now believed that a combination of alcohol and tobacco in less moderate doses actually aggravates the anginal syndrome.

The controversy over use of tobacco in patients with angina may be said to be still with us in the case of patients in the plural; but it would be scarcely correct to say that the controversy exists in the case of the individual patient in whom the clinical trial generally effects a resolution of the problem.

It may be emphasized that angina pectoris is merely a clinical syndrome which tobacco is able to provoke or aggravate under certain circumstances; that the effect of agitation, haste, heavy meals, and late hours may add up to more than that of the tobacco. Tobacco may release an anginal crisis just as physical exertions and other factors can do; but the role of tobacco is much less important than that of the latter factors since cases in which tobacco alone can precipitate an anginal crisis are rare. In the majority of cases, tobacco acts only in association with other factors.

Acute Myocardial Infarction. Smoking should be prohibited in the acute stages of cardiac infarction; some authorities have stated that smoking is probably best avoided thereafter, especially in the nicotine-susceptible individual. For the long range plan it appears that the majority of authorities adopt the recently developed point of view that a dogmatic prohibition of smoking may not be in the best interest of all patients. Because tobacco is known to cause arterial vasoconstriction and, occasionally, electrocardiographic changes of coronary insufficiency can be seen to occur in sensitive persons after smoking, use of tobacco would seem contraindicated after coronary thrombosis. From a more practical standpoint, however, in management of the entire patient it is at least equally important that he be emotionally rehabilitated with the realization that his life can again be productive after a heart attack. In general, moderation and not total abstinence seems the most practical answer in selected cases.

Peripheral Vascular Disease. The authorities are virtually in agreement that tobacco is harmful in individuals with peripheral vascular disease, and should therefore be prohibited. When tobacco hypersensitivity or idiosyncrasy is demonstrated either clinically or by positive skin reactions or by both, exclusion of tobacco should be one of the prerequisites in treatment of patients with peripheral vascular disorders. Whether tobacco be a specific allergic excitant or a potent nonspecific irritant, it should be avoided by all persons who suffer from vascular disease.

On the other hand, it may possibly be thought unwise to attempt abrupt modification of deeply ingrained habits, especially in the elderly. It has been remarked that tobacco is safer after the age of 60 years. Denicotinized cigarettes of any type should also be avoided in the presence of peripheral disease because these—as well as regular cigarettes—cause decreases in peripheral blood flow.

Intermittent Claudication. One recent assessment of the position in relation to this problem has been made which notes that continued use of tobacco by patients with this disorder is still strongly interdicted by many authorities. The fact that tobacco-smoking increases the tone of peripheral vessels is adequate justification for urging all patients with acute arterial insufficiency to stop smoking, at least until the imbalance between obstruction and collateral flow has been improved. However, there is no evidence that tobacco—any more than mildly cold weather—adversely affects the course of the disease.

Thromboangiitis Obliterans. With a unanimity rare—if not unique—among writers on tobacco, virtually all observers and commentators are agreed that smoking is harmful in thromboangiitis obliterans (TAO), and that all patients with this disease should abstain from tobacco. Abstinence must be complete and permanent.

Abstinence from tobacco is beneficial, and should form the primary basis for all treatment in TAO. This is not hypothetical, but a well established

fact. Many clinicians have emphasized that the disease seldom progresses as long as the patient refrains from smoking. In fact, they would add that patients with TAO who stop smoking can be assured a remission in their disease which can and does last for years with no need for any form of therapy other than abstinence from nicotine. This opinion is not held by all, however, with the added recommendation that other forms of treatment be instituted in addition to abstinence from tobacco—this includes denicotinized and filtered tobacco.

Chronic Bronchitis. Generally, it is considered that the proper treatment of chronic bronchitis involves cessation of smoking. Aggravation of chronic bronchitis by heavy smoking appears to result from (nonspecific) irritation from tobacco smoke and, not surprisingly, is correlated with inhalation of the irritant.

It may be noted that some patients with chronic bronchitis claim that the early-morning cigarette is a useful expectorant; that coughing due to inhaling cigarette smoke results in expectoration of considerable amounts of bronchial secretion and results in a marked relief of dyspnea.

Pulmonary Emphysema. Although the theory that heavy smoking—especially cigarette smoking—is a common and perhaps specific cause of obstructive pulmonary emphysema cannot be substantiated, smoking is generally held to be harmful to patients with this disease. Most writers agree that in treatment of pulmonary emphysema, cessation of smoking is extremely important. Persons with bronchitis who develop the earliest signs or evidence of emphysema should stop smoking in any or all forms. One physician bluntly told his own patients: "Make up your mind whether you would rather smoke or breathe." If, however, after 30 days of no smoking, the emphysematous patient feels no better, another physician allowed his patients to smoke in moderation. In a large number of instances in one series of 250 cases, patients with pulmonary emphysema who succeeded in stopping smoking obtained complete subjective relief from cough and wheeze and frequently wheezing was decreased or cured.

Pulmonary Tuberculosis. A number of writers have expressed the opinion that smoking is harmful in active tuberculosis and should be forbidden. This may be because respiratory trauma—which is inevitable in a coughing compulsive smoker—probably decreases the ability of pulmonary tissue to defend itself against the tuberculosis bacillus. On the other hand, others have considered that within limits of moderation the lesions of pulmonary tuberculosis do not appear to be worsened by the use of tobacco. In one survey of 50 directors of sanatoria, 95% were of the opinion that smoking was at least injurious, but less than 20% felt it should be completely forbidden. This latter attitude was perhaps engendered by the fact that it is quite difficult to discourage patients from a habit of long standing in return for a benefit of questionable value.

Peptic Ulcer. With respect to the role of tobacco in management of peptic ulcer, the clinical opinions expressed may be separated into three

main categories: any use of tobacco is more or less flatly forbidden; excessive use is discouraged rather than forbidden and moderate use permitted, either openly or tacitly; and use is regulated on an individual basis.

Although he warned in all cases against immoderate smoking, Rowlette recommended studying the reaction of the ulcer patient to tobacco; Kirsner agreed that use of tobacco in such patients is dealt with most practicably on an individual basis. The recommendation of complete abstinence is preferable to an ineffectual suggestion of "decreasing" the quantity of tobacco. Excessive smoking ordinarily reflects increased nervous tension; the important problem, therefore, is relief of the emotional stress. Ordinarily, tobacco is to be avoided by the ulcer patient of younger years; however, harm from its temperate use by a person past 60 is hard to imagine considering the lowered acidity of his stomach and the peace of mind its use affords after years of temperate indulgence.

Even moderate amounts of tobacco may be harmful in susceptible individuals. Patients with peptic ulcer who are hypersensitive to tobacco will experience aggravation of their symptoms by use or over use of tobacco; such persons should be enjoined to give up smoking. Those who allow smoking appear to be agreed that moderate smoking after meals is less harmful to the ulcer patient than is smoking when the stomach is empty.

It has been said by some writers that tobacco is a major influence in the prevention of healing and the recurrence of peptic ulcer; others claim that it has no effect. In general, however, the majority of opinions is that it plays some deleterious effect and produces some delayed healing. Moreover, the consensus would seem to be that smoking after surgery for gastric ulcer is to be even less condoned.

Summary

The realization has long existed that, so far as the smoking patient is concerned, one must allow for a balance between the "psychic" benefit derived from smoking and its "physical" harm; also between the individual pleasure derived from smoking and the "increased mortality" of smokers often assumed or suggested by statistics; and between the "tranquillizing" effect of smoking and the nervous stress which often accompanies giving up smoking for even the most compelling of reasons.

From still another point of view it may be said that smoking may prevent certain permanent undesirable effects of stopping smoking. For example, the danger of neurosis developing in individuals who find themselves unable to give up the habit, or the danger that the increase in eating and body weight which often occurs following giving up smoking, may place more "strain" on the heart than the smoking itself.

As for the purely temporary discomfort of "withdrawal symptoms" on stopping smoking, this should not be made the basis of any joint physician-patient decision whether the patient shall stop or continue his smoking. It is

the physician's duty to inform the patient as fully and clearly as possible as to the facts as they are now known, of the potential risks of smoking, and to let the patients make their own decisions—as most of them will do anyway. Positive advice would depend upon the individual's physical condition, his smoking habits, and his reaction to smoking.

The main conclusions to be drawn from this survey on the role of tobacco in management of disease are clear enough. In the case of specific tobaccogenic diseases properly diagnosed, the cause of the disease—by definition, tobacco—may be forbidden without doubts and should be prohibited without equivocation. With respect to tobacco use in management of non-tobaccogenic but tobacco-aggravated diseases, there is nothing better than abstention from tobacco, though sometimes there may be something worse; emotional disturbances of one sort or another, or the substitution of an even less desirable habit for that of moderate tobacco smoking. Therefore, the "psychic" good the habit of tobacco smoking does a particular patient may be greater than its "somatic" harm. This fairly recent realization on the part of the physician represents the "changing concept" of the title: with tobacco smoking—as with much else in the practice of medicine—the categorical imperative must sometimes yield to individual considerations.

* * * * *

ECG Findings in Ventricular Hypertrophy

Arthur Selzer, Elihu York, David Y. Naruse, and Charles H. Pierce, Department of Medicine, Stanford University School of Medicine, San Francisco, Calif. *Electrocardiographic Findings in 500 Cases with Hypertrophy of Cardiac Ventricles*. *Amer J Med Sci* 240: 543-551, November 1960.

The authors studied 500 consecutive autopsy cases which showed cardiac hypertrophy according to established criteria, and which had antemortem electrocardiograms available for correlation with the gross findings. Left ventricular hypertrophy was present in 261, right ventricular hypertrophy in 35, and combined ventricular hypertrophy in 204 cases. Essential features of the results are shown in tables.

Left ventricular hypertrophy (LVH) could be established in approximately half the cases only. This is particularly significant because the presence of ventricular hypertrophy took precedence over any other diagnosis so that patients who showed electrocardiographic evidence of myocardial infarction and ventricular hypertrophy were listed as hypertrophy; the infarction was disregarded. In the half of the cases with pathologically proven LVH in which none of the electrocardiographic criteria of LVH were present, two categories of electrocardiograms had been found—normal and abnormal. The normal electrocardiograms constitute false-negative diagnoses. Abnormal

electrocardiograms are thought to primarily represent obliteration of the criteria identifying LVH by focal myocardial disease.

Table 1.--Electrocardiographic Findings in 500 Cases with Pathologic Diagnosis of LVH, RVH and CVH.

Pathologic diagnosis	Electrocardiographic findings					
	LVH	RVH	MI	NDP	BBB	N-B
Left ventricular hypertrophy (261 cases)	133 (51%)	---	46 (18%)	41 (15%)	21 (8%)	20 (8%)
Right ventricular hypertrophy (35 cases)	---	16 (46%)	6 (17%)	8 (23%)	1 (3%)	4 (11%)
Combined ventricular hypertrophy (204 cases)	61 (31%)	1 (0.5%)	39 (19%)	39 (19%)	23 (10.5%)	41 (20%)
Total (500 cases)	194 (39%)	17 (3%)	91 (19%)	88 (18%)	45 (8%)	65 (13%)

Abbreviations: LVH--left ventricular hypertrophy; RVH--right ventricular hypertrophy; MI--myocardial infarction; NDP--non-diagnostic patterns; BBB--bundle-branch block; N-B--normal and border-line electrocardiograms.

The reliability of the diagnosis of right ventricular hypertrophy (RVH) in this study appears to be similar to that of LVH because percentage-wise also, only half of the cases can be identified. However the selection of cases from the pathologic standpoint was different in that only severe degrees of RVH were likely to be included in the series. Taking this fact into consideration, the conclusion appears justified that the accuracy of the diagnosis of RVH is considerably lower than that of LVH. This confirms the opinion that electrocardiographic-pathologic correlation of isolated RVH is poor.

The problem of the electrocardiographic diagnosis of combined ventricular hypertrophy (CVH) has always presented considerable difficulty. Except for childhood cardiac disease where entirely different electrocardiographic criteria are applicable, no well established diagnostic features which enable such a diagnosis are known. In most textbooks of electrocardiography,

CVH is either entirely omitted or only briefly mentioned. In some papers it has been suggested that discordant findings between extremity and precordial electrocardiographic leads suggest CVH, such as when hypertrophy of one ventricle appears likely by precordial lead configuration and hypertrophy of the other ventricle by extremity lead axis.

Table 2.--List of Principal Pathologic Diagnoses in 65 Cases with Normal and Borderline Electrocardiograms

Cardiorenal disease	5 cases
Chronic pulmonary disease	13 cases
Cirrhosis of the liver	10 cases
Malignant tumors	32 cases
Miscellaneous	5 cases

Although no attempt was made in this study to diagnose CVH electrocardiographically, an opportunity to review electrocardiographic findings in pathologically proven CVH was provided. The largest single groups of electrocardiograms in proven cases of CVH showed the electrocardiographic pattern of LVH alone (61 cases). The second largest group showed normal and borderline electrocardiograms (41 cases).

Table 3.--List of Possible Factors Responsible for Cardiac Hypertrophy in 65 Cases with Normal and Borderline Electrocardiograms

Chronic hypertensive disease	17 cases
Coronary artery disease, gross	15 cases
Chronic pulmonary disease	13 cases
Possible high output states	27 cases
None of above factors found	12 cases

These findings are interpreted as follows: In the presence of CVH in adult heart disease, LVH may dominate the electrocardiographic picture and overshadow RVH, the reverse being rare. In other cases in which the ECG is not distorted by gross myocardial infarction or bundle-branch block, the effects of LVH and RVH upon the ECG may balance each other. This balancing effect is due to the fact that forces of depolarization and repolarization alike are directed oppositely in hypertrophy of the two ventricles. If the two effects are perfectly balanced, the ECG may be normal or near normal.

If the balancing effect is partial, then various nondiagnostic abnormalities may result. In line with this interpretation, it is of interest to note the

frequency of normal tracings in high output states. Inasmuch as these states overload the entire heart to the same extent, they are likely to cause well-balanced CVH, therefore causing little distortion of the ECG. Yet, high output states account presumably for only a small number of cases with CVH. More often CVH is caused by hemodynamic factors overloading the two ventricles independently of each other. Probably the commonest sequence of events is the earlier development of LVH and failure leading secondarily to pulmonary hypertension and RVH. In such cases the LVH pattern in the ECG may persist.

* * * * *

Physiology of Peptic Ulcer

Morton I. Grossman, University of California Medical Center, Los Angeles, Calif. The Pathologic Physiology of Peptic Ulcer. Amer J Med 29: 748-753, November 1960.

The ways in which patients with peptic ulcer differ physiologically from persons without ulcer is summarized by the author. Particular attention is given to recent contributions to knowledge in this area. Such information is of first importance for evaluating hypotheses about the etiology and pathogenesis of the disease and for developing a physiologically rational therapy.

Gastric Secretion

Acid. The mean concentration of acid in the gastric and proximal duodenal contents under basal conditions and after food is higher in patients with duodenal ulcer than in persons without ulcer. That this is caused primarily by increased rate of secretion of acid rather than by failure of acid to be neutralized, is supported by many observations showing that the mean rate of acid secretion under basal conditions, after food or after stimulation by drugs (histamine, caffeine, insulin), is higher in patients with duodenal ulcer than in those without this disease. From such data on mean values the inference is frequently drawn that most patients with duodenal ulcer secrete an abnormally large amount of acid. It is apparent that, although the mean rate of acid secretion is substantially higher in patients with duodenal ulcer, the proportion of such patients who secrete more than the upper limit of normal is, except in the instance of the caffeine test, 50% or less. It follows that only a minority of patients with duodenal ulcer will be distinguishable from persons without the disease on the basis of most of the standard secretory tests.

The mechanism of hypersecretion of acid in patients with duodenal ulcer is not fully established. The hypotheses which have been advanced

include (1) impaired inhibition of secretion, (2) excessive stimuli for secretion, especially vagal, and (3) increased reactivity of the glands to stimulation. Studying the results of some experiments, it has been concluded that a defect in the inhibitory mechanism is not a major cause of hypersecretion. Excessive vagal stimulation does not appear to be the entire picture either because vagotomy not only abolishes secretion caused by vagal stimuli, but also greatly decreases the response to other stimuli such as histamine. Because salivary hypersecretion is correlated with gastric hypersecretion there is suggestive, but far from conclusive, evidence that parasympathetic overactivity may be present.

The most appealing hypothesis that has been offered to account for the hypersecretion of acid in patients with ulcer of the duodenum is that it results from the increased number of parietal cells which the gastric mucosa of these patients is known to have. One investigator found that both the area of the fundic gastric mucosa and its thickness were greater on the average in patients with duodenal ulcer than in persons without the disease. Corresponding to the increased volume of fundic mucosa was an increased number of parietal cells.

Why do patients with duodenal ulcer have larger than normal numbers of parietal cells? One possibility is that it is a genetically determined trait, but there is no evidence for or against this supposition. Another possibility is that prolonged increased stimulation of secretion leads to hyperplasia of parietal cells. There is some evidence from studies in animals for the occurrence of such hyperplasia in response to prolonged increases in stimulation.

High secretory rates seen in patients with duodenal ulcer probably are present for years before the ulcer and its symptoms appear. The rate of basal secretion does not change when the duodenal ulcer heals. These findings indicate that the hypersecretion is not caused by the ulcer itself; they also suggest that the cyclic appearance and disappearance of the ulcer is related to factors other than variations in acid secretion.

In sharp contrast to patients with duodenal ulcer, those with gastric ulcer do not, in general, have abnormally elevated rates of acid secretion. However, there are two categories of gastric ulcer to which this generalization does not apply—prepyloric gastric ulcers and gastric ulcers occurring concurrently with duodenal ulcers. In the remainder of patients with gastric ulcer, perhaps the same factor which causes depressed acid secretion also renders the mucosa more susceptible to ulceration.

Pepsin. In normal subjects and in patients with gastric or duodenal ulcer the rate of pepsin secretion is correlated with the rate of acid secretion, both under basal conditions and after stimulation by test meals or drugs. Thus, just as with acid secretion, patients with duodenal ulcer show increased rates of pepsin secretion. The concentration of pepsinogen in blood serum and its rate of excretion in the urine are also increased in patients with duodenal ulcer.

Mucus. That mucus serves to protect the mucosa against digestion by acid and pepsin is an ancient and plausible notion which is difficult either to

prove or refute. Presumably, the layer of mucus which separates the mucosal cells from the contents in the lumen is of greatest importance in providing the alleged protection. Resolution of the matter awaits development of suitable methods for study. The same may be said for other factors which are put under the necessarily vague, but probably crucially important, heading of tissue resistance to digestion. Until these factors are identified and means for measuring them developed, little can be said about them.

Gastroduodenal Motility

The mean rate of gastric emptying of test meals of saline solution, glucose, or acid is normal in patients with duodenal ulcer. The frequency and amplitude of pressure waves during fasting in the stomach and duodenum of patients with gastric or duodenal ulcer do not differ from those of normal subjects. There is some indication that pressure waves in the stomach and duodenum may be increased in frequency and amplitude during the occurrence of pain from peptic ulcer. There is no evidence for existence of a derangement of gastroduodenal motor activity which might act as a causative factor in peptic ulceration.

Blood Group

Observations in many countries have established that persons who possess blood group O have a higher incidence of peptic ulcer than those with other blood groups. Combined observations show that among persons with blood group O the risk of having a duodenal ulcer is approximately 1.4 times the risk among other persons. Similarly, the risk of O subjects having gastric ulcer is 1.2 times that of persons having the other three blood groups.

Another genetic factor which may be involved in the etiology of peptic ulcer is the secretor status. This trait is determined by a single pair of allelic genes independent of those for ABO groups. About 75% of persons secrete ABH substances in saliva and gastric juice. A clear association between ABH non-secretion and duodenal ulcers has been found.

The liability to duodenal ulceration from being simultaneously O and nonsecretor is at least additive. All observations regarding these features invite the speculation that the presence of certain blood group substances in the secretions and cells of the stomach and duodenum in some way protects against duodenal ulceration.

Miscellaneous Observations

The secretory response of the pancreas to intravenously administered secretin is normal in patients with duodenal ulcer. Certain rare forms of peptic ulcer disease are clearly associated with endocrinopathies. This has

led to an interest in endocrine function—particularly adrenocortical—in the usual patient with ulcer. There is no evidence for increased adrenocortical activity in patients with active or inactive peptic ulcers.

Conclusions

Although some patients with duodenal ulcer secrete abnormally large amounts of acid and pepsin, many secrete normal amounts. Patients with prepyloric gastric ulcer have secretory patterns similar to those with duodenal ulcer. Ulcer of the body of the stomach is associated with decreased acid secretion. The secretory levels of these various groups are to a large extent determined by the amount of glandular tissue in the stomach; alterations in the amount of stimulation playing upon the glands may contribute but have not as yet been clearly established. No characteristic alterations in gastroduodenal motor activity exists in patients with peptic ulcer except perhaps during periods of pain.

* * * * *

Pheochromocytoma

R. O. Diefendorf, A. O'Donnell, and E. W. Creelman, The Schutt Clinic, 532 Fifth St., Bremerton, Wash. Arch Surg 81: 679-682, November 1960.

Eight hundred people die annually in the United States from pheochromocytoma. The fact that all could be saved is the stimulus for discussing this entity. Once a rarity and diagnosed only at the autopsy table, this easily forgotten lesion is being recognized with increasing frequency and removed with safety.

A pheochromocytoma is a tumor composed of pheochromocytes which are derived from sympathetic formative cells. They may arise anywhere in the chromaffin system, but 90% occur in the adrenal medulla, the right more commonly than the left; most of the remainder occur in the retroperitoneal area in the lumbar gutters. But to make the problem difficult, a number have been reported in the chest along the sympathetic chains; a few have been found in the wall of the intestine, the urinary bladder, within the kidney substance, in the neck, brain, testis, and ovary. The association of pheochromocytoma with neurofibromatosis is sufficiently frequent that it cannot be regarded as fortuitous, and is probably explained on the common embryologic origin of chromaffin and neural tissue. Approximately 10% of pheochromocytomas are bilateral or multiple and about the same number are malignant. The tumors vary in size from 1 to 10 cm and up to 2000 gm.

The majority of symptoms in a given case are due to the excess of levarterenol and/or epinephrine secreted by the tumor. They fall into three

categories: (1) hypertension, paroxysmal or sustained, the latter being more common; (2) hypermetabolism without hyperthyroidism, and (3) hyperglycemia. More specifically, the patients complain of headaches and visual disturbances, tremor, palpitation and increasing nervousness, anxiety with sense of impending death, vasoconstriction of hands and feet, excessive sweating, loss of weight, elevation of body temperature, and gastrointestinal symptoms including severe epigastric pain, nausea, vomiting, and even gastrointestinal bleeding. This wide variety of symptoms—so many of which are seen in functional disease—tend to obscure the diagnosis.

The approach to the diagnosis of pheochromocytoma is now well understood and makes use of certain well-established tests. Occasionally only a few of these are necessary. The single best test—excellent for screening purposes and easily carried out as an office procedure—is the phentolamine test. Of the sympathetic blocking agents, this has proved to be accurate, safe, and simple. This is the test of choice when hypertension is of the sustained type. A blood pressure drop exceeding 35 mm systolic or from hypertensive to normotensive levels is considered diagnostic.

With paroxysmal hypertension, a diagnosis of pheochromocytoma is confirmed if increase in blood pressure is precipitated by histamine. This test may be dangerous and should not be used if the blood pressure is considerably elevated.

Probably the most important test (introduced in 1952) is the quantitative determination of the urinary catecholamines, epinephrine, and levarterenol. When these substances are greatly increased, the diagnosis is almost certain. Variation of this test is the determination of these substances in the blood serum.

Three other examinations have been reported. Use of perirenal air for outlining the tumor has lost its popularity because of the associated mortality and incidence of diagnostic error. Aortography which may outline the tumor is considered too hazardous. In the past year, inferior-vena-cavagram has outlined a tumor of the right adrenal, but it is doubtful if this test will be much utilized. Routine films of the chest—particularly in oblique projection—will sometimes aid in revealing an intrathoracic pheochromocytoma. Blood sugar, glucose tolerance test, BMR, and intravenous pyelograms will be of some help in elucidating the diagnosis.

Localization of the tumor preoperatively is not so important as formerly thought. There is almost complete agreement that the transabdominal route of exploration is the best. This allows for bilateral exploration of the adrenals and for exploration of the entire retroperitoneal space. Conversion to thoraco-abdominal exposure is in order if necessary.

Anesthesia—which should be the best available—presents specific problems: (1) easy induction to eliminate stress hypertension; (2) complete relaxation in this difficult surgical area; (3) ability to cope with thoraco-abdominal physiology, and (4) preparation for control of hypertension and hypotension.

One of the most important problems relating to pheochromocytoma is the problem of hypertension occurring during an operation for some unrelated condition. This constitutes an emergency not unlike cardiac arrest; it may lead to sudden death from cerebral hemorrhage, shock, acute cardiac decompensation, and pulmonary edema. When pheochromocytoma is unrecognized and operation is performed for another condition, the mortality may be as high as 50%.

Reviewing the problem of pheochromocytoma, the words of Da Costa seem most appropriate, "What we need most is not to be informed, but to be reminded."

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Early Postoperative Bathing

Carl J. Heifetz, Department of Surgery, Washington University School of Medicine, St. Louis, Mo. Arch Surg, 81: 127-128, December 1960.

Simplification of postoperative care continues to be a highly desirable goal of surgeons. Early restoration of the patient to his normal environment has been aided by use of nonabsorbable suture materials for strong and early wound healing, extremity exercises in bed, early ambulation, administration of full diets as soon as the gastrointestinal tract will receive them, early continuation of convalescent care at home, return to physical work as soon as the wound has adequate tensile strength, et cetera. One of the helpful simplifications has been the policy of leaving dressings off clean, well-coaptated surgical wounds, or of removing them a day or two after surgery. Many St. Louis surgeons have with gratification adopted this procedure for abdominal and other wounds; elsewhere others have similarly simplified the care of thoracic wounds, too.

One group of experimenters showed that clean well coaptated surgical wounds of rabbits' abdomens are sealed by a coagulum of fibrin and red cells within a matter of minutes, and that this seal is an effective barrier against bacterial contamination from external sources; contamination with virulent bacteria as early as one hour after these wounds had been sealed did not produce wound infections. The external sources of contamination in hospital patients are the intentional or accidental placement on or near the wound of hands, bed clothing, et cetera. Because carefully selected wounds left without dressings have done as well as those covered with dressings, it seems logical that the well sealed wound would also be an effective barrier against water contamination occurring during shower or tub bathing.

A group of 100 patients with 107 wounds whose dressings were left off altogether or whose dressings were removed on the first or second postoperative day were allowed to bathe or shower daily starting on the second or third

postoperative day. No attempt was made to keep water or soap off the wounds. The results indicated that ordinary bathing in a shower or tub seemed to have no adverse effect on the healing of clean, well coaptated surgical wounds. Complications in the 107 wounds were varying degrees of edema and redness at the suture line in 5 wounds, a stitch abscess around the stay sutures of one wound, and skin necrosis around a tightly tied stay suture in another. The complications were almost comparable to a control series of 102 patients with 108 wounds whose wounds were left without dressings, but were not permitted to bathe as early.

Two benefits seem to derive from this simplification of postoperative care. The first is concerned with the psychic uplift that the patient gets from full bathing of the body. No bed bath, no matter how skillfully done, seems to cleanse the skin as well as a shower or tub bath. The second advantage is the reduction of work and time of the nurse or aide.

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MISCELLANY

Advanced Course in Nuclear Science

An advanced course in Nuclear Science for Medical officers (NSMO) of approximately 13 months' duration will convene on 11 September 1961 at the University of Rochester, Rochester, N.Y. TOP SECRET clearance is required at the beginning of the course.

Course Objective. The mission and scope of the course is to provide facilities for a limited number of selected Army, Navy, and Air Force Medical officers to receive the additional technical education needed to cope with medical problems involved in all phases of the national atomic weapons program. The course includes an Advanced Academic Phase, successful completion of which leads to the MS degree in Radiation Biology, and several practical phases covering a wide variety of atomic energy experiences. During the course, medical aspects covering the complete range of nuclear radiation levels from low-level, peacetime, laboratory situations up through high-level, wartime, full scale nuclear warfare situations are presented. The participating agencies and approximate lengths of the phases are:

Phase I Radiation Biology (10 months)—School of Medicine and Dentistry,
University of Rochester, Rochester, N.Y.

- Phase II Nuclear Reactor Orientation (one week)—Idaho Operations Office, AEC, Idaho Falls, Idaho.
- Phase III Military-Medical Aspects (4 weeks)—(1) Nevada Test Site, Mercury, Nev.; (2) Sandia Base, Lovelace Clinic, Albuquerque, N. M., and vicinity; (3) Los Alamos Scientific Laboratory, Los Alamos, N. M.
- Phase IV Medico-Military Applications (8 weeks)—(1) National Naval Medical Center, Bethesda, Md.; (2) Walter Reed Army Institute of Research, Washington, D. C.

Academic Refresher Phase. For candidates of the Nuclear Science Course who need it, the Defense Atomic Support Agency also arranges with the University of Rochester for an Academic Refresher (AR) Phase preceding Phase I. The AR Phase consists of the 6-week summer school session convening normally on the last Monday in June preceding the convening of Phase I in September. Candidates assigned to the AR Phase will, at the time of summer school registration, select one of three optional combinations of calculus and/or physics to fit their individual needs.

Eligibility. A class quota of 15 has been assigned: Army 6, Navy and Air Force 4 each, and one from the U.S. Public Health Service. Requests for attendance are invited from Medical Corps, or Medical Service Corps officers of the Regular Navy; and Medical Corps or Medical Service Corps Reserve officers who are on active duty and are eligible to apply for and be accepted for appointment in the Regular Navy. All applicants must meet the admission requirements of the University of Rochester. The nominating bureau for the Navy is the Bureau of Medicine and Surgery.

Applications. Interested officers may submit a letter of request via their Commanding Officers to reach the Bureau of Medicine and Surgery (Attn: Code 316) prior to 15 February 1961. If attendance at the AR Phase is desired, it should be so indicated on the application.

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BUMED INSTRUCTION 6810.4A

23 November 1960

Subj: Ophthalmic services (spectacles) and related procedures

Spectacles may be provided to active duty and retired personnel. Under ordinary circumstances, personnel of the uniformed services should apply for spectacle issuance at the medical facility of their respective service. A member who is away from his duty station or is on duty, or has retired and now resides, in an area where there is no available medical facility of his own service may be provided spectacles at the nearest available medical facility of any of the uniformed services. This instruction promulgates specific information pertaining to fabrication and issuance of spectacles.

BUMED NOTICE 6100

15 November 1960

Subj: Reports of medical boards; preparation of

This directive advises addressees concerning the prohibition against expressing opinions regarding unfitness for duty in reports of medical boards. Rather, it is the prerogative of a physical evaluation board to submit recommended findings concerning the member's unfitness for duty in cases properly referred to it. Medical boards should report impairment of function in terms of objective tests and findings without resulting opinions or conclusions.

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Post-Military Career Placement Program

The U.S. Department of Labor announces a Post-Military Career Placement Program which is tailored for the individual who is retiring or has retired from his military career, but is still interested in active employment. The program includes—without charge—furnishing advice and consultation in the preparation of a resume and in developing job openings.

The Department of Labor is frequently requested by private concerns and governmental agencies for aid in finding suitable persons to fill positions in the field of medicine. At present, the greatest demand is for physicians, psychiatrists, pharmacists, and medical technologists. Interested personnel should contact either the U.S. Employment Service for the District of Columbia, Professional Office, Solar Bldg. Rm. 705, 1000 16th St., N.W., Washington 6, D. C.; or the local office of the Public Employment Service.

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Board Certifications - Active DutyAmerican Board of Neurological Surgery

LCDR Matthew W. Wood MC USN

American Board of Ophthalmology

LT John T. Schwartz MC USNR

American Board of Pathology

LT John D. Culberson MC USNR

LT James E. Grassi MC USNR

LT Joseph P. O'Connell MC USN

LCDR James E. Wilson MC USN

American Board of Surgery

LT Stanley L. Grossman MC USNR
LCDR John D. Johnson MC USN
LCDR Robert W. Love Jr MC USNR
LCDR Don F. Thomas MC USN

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Recent Research ReportsU. S. Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Technique for the Histological Representation of Hard and Soft Tissues by means of High Resolution Microradiograms. Memorandum Report 60-3. MR 005.02-0001.06. 2 July 1960.
2. Respiratory Responses to the Inhalation of Oxygen at Atmospheric Pressure in Trained Underwater Swimmers. MR 005.14-3001.01. Report No. 2. 2 July 1960.
3. Nomogram for the Determination of Human Body Surface Area from Height and Weight. MR 005.12-3001.01. Report No. 2. 2 July 1960.
4. Modification of the Diabetogenic Action of Alloxan by Epinephrine, and the Possibility of Nonspecific Protection in Experimental Diabetes. MR 005.03-0001.01. Report No. 10. 2 July 1960.
5. Oxygen Capacity of Stored Frozen Blood. MR 005.02-1001.05. Report No. 1. 2 July 1960.
6. Effect of Varying Rates of Concentration Increase upon the Analgesic Potency of Various Concentrations of CO₂ in Rats. MR 005.14-3001.01. Report No. 1. 2 July 1960.
7. Connective Tissue Changes in Molybdenum Toxic Rats. MR 005.12-5000.01. Report No. 8. 13 September 1960.

U. S. Naval Medical Research Unit No. 3, Cairo, Egypt

1. Observations on Hepatozoon Balfouri (Laveran, 1905) MR 005.09-1402.13.01. October 1960.
2. Ticks (Ixodoidea) on Birds Migrating from Africa to Europe and Asia. MR 005.09-1402.3.12. November 1960.

U. S. Naval Medical Research Unit No. 4, Great Lakes, Ill.

1. Epidemicity of Adenoviruses in Naval Recruits with Observations on Their Occurrence with Streptococci and Influenza Viruses as Partners of Infection. MR 005.09-1203.2. 8 November 1960.

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NOTE: Under Recent Research Reports, Medical News Letter, 6 January 1961, the designation of the Dental Research Unit should read: Dental Research Facility, Dental Department, U. S. Naval Training Center, Great Lakes, Ill.

From the Note Book

The Surgeon General Visits Aftica. RADM B. W. Hogan, Surgeon General of the Navy, as Medical Consultant to the House Foreign Affairs Subcommittee on Africa, in addition to serving in other capacities, accompanied the Committee to Egypt, Ethiopia, Tanganyika, Zanzibar, Kenya, Uganda, Nigeria, Ghana, and Morocco during December 1960. The report of his trip will be presented in the News Letter for 3 February 1961.

Physical Examinations for Promotion of Officers. A proposal to eliminate physical examinations for promotion of officers was discussed at a conference of BuPers and BuMed representatives. Instead of undergoing a physical examination in order to qualify for promotion, the officer would be examined on record; that is, any officer in a full duty status would be considered physically qualified for promotion. Under the present system many man hours are lost by officers taking the examinations. The proposed system would relieve field activities of a considerable burden and would reduce the number of physical examinations reviewed in the Bureau by approximately 41,000.

Operation Chairlift. CAPT Francis G. Soule Jr MC USN, Senior Medical Officer at the Naval Station Hospital, Subic Bay, P.I., presented eight wheel chairs to patients at the National Orthopedic Hospital in Mandaluyong, Rizal. This program enabled Filipino hospital patients to return home with the hope of leading productive lives. On each chair was affixed a metal plate with the inscription—"To speed your recovery." At the presentation ceremony, CAPT Soule expressed the hope that more surplus chairs would be found to allow a continuing program of this sort for deserving Filipinos.

Special Honor for CAPT Phillips. CAPT R. A. Phillips MC USN, Commanding Officer of NAMRU-2, was recently decorated with the Cloud and Banner Medal and Grand Cordon by ADM Ni Uy-hsi, Commander-in-Chief of the Chinese Navy. The award was made on behalf of the Republic of China in acknowledgment of CAPT Phillip's great contribution to the Chinese Navy and his remarkable achievements in medical science.

MD Officers Active in AIHA. Navy Medical Department officers of the Washington, D. C. area have played prominent roles in the Washington-Baltimore Section of the American Industrial Hygiene Association during 1960. CDR G. A. L. Johnson MSC USN, Head, Industrial Hygiene Branch, BuMed, served as vice-president and program chairman during 1960 and was elected president for 1961. CDR N. E. Rosenwinkel MC USN, Director of the Occupational Health Division, BuMed, was guest speaker at the autumn dinner meeting held at NNMC, Bethesda, Md. CDR H. D. Baldrige MSC USN, Special Projects Office, BuWeps, was the guest speaker for the winter meeting at the Naval

Weapons Plant. Membership in the Section is comprised of military officers and civilians engaged in industrial medicine and industrial hygiene from private industry and federal, state, and municipal governmental agencies of the area.

Refresher Training for Filipino Physicians. Six Filipino physicians who are chiefs of services in provincial hospitals are receiving 3-month refresher courses at the Naval Station Hospital, Subic Bay: 3 in clinical surgery and 3 in clinical medicine. All receive training in public health and sanitation. This program—on a trial basis—is considered valuable by the local physicians and is expected to be a useful measure for continuing a feeling of reciprocal good will.

CDR Millar, Director of Gorgas Institute. CDR J. W. Millar MC USN, Director, Preventive Medicine Division and Head, Tropical Diseases Branch, BuMed, has been elected a director of the Gorgas Memorial Institute of Tropical and Preventive Medicine, taking the place of CAPT H. K. Sessions, now retired.

Pathogenesis of Acute Cholecystitis. Because it is a common belief that reflux of pancreatic secretions into the gallbladder is an important factor in pathogenesis of acute cholecystitis, the authors conducted a series of experiments with dogs. Their results seem to indicate that mechanical and vascular factors are more important in pathogenesis of acute cholecystitis and necrosis of the gallbladder than is disordered chemistry of bile. (J. Byrne, R. Berger, Arch Surg, November 1960)

Catecholamines in Diagnosis of Pheochromocytoma. A comprehensive review of pheochromocytoma is presented with particular emphasis on technics available to the routine clinical laboratory for such diagnosis. Most procedures are qualitative, at best. Evaluation of available data seems to indicate that the true incidence of pheochromocytoma is approximately 50 cases per year in the United States. (R. Straus, M. Wurm, Amer J Clin Path, November 1960)

Gas-Exchange of Glycerolized Frozen Blood. Blood collected in heparin-saline solution, glycerolized, and frozen shows a significant shift of the oxyhemoglobin dissociation curve to the left when reconstituted after 4 to 210 days' storage. On infusion of such blood into a patient as a total blood volume replacement, the shift is corrected in less than one day. Similar shifts induced by total blood volume replacement with bank ACD blood stored over 13 days at 4 C were not corrected completely at the end of 4 days. Although the shift appears to be rapidly correctable, elimination of the effect would be desirable. (LT T. G. O'Brien MC USNR, J Thor Cardio Surg, November 1960)

Treatment of Diarrheal Disorders. Proceedings of a round-table conference on diagnosis and treatment of diarrheal disorders with particular reference to use of polycarbophil-thihexinol (Sorboquel) is published. Thihexinol is parasympatholytic, inhibiting gastrointestinal motility without significantly depressing gastric secretion; polycarbophil absorbs free fecal water and produces a formed gel within the bowel lumen. Use after thorough diagnostic study as indicated is considered suitable for symptomatic treatment. (Round-table, Amer J Dig Dis, November 1960)

Phenylketonuria. A PKU kit, utilizing ferric chloride impregnated paper strips, has simplified search for cases of phenylketonuria, particularly in the high-risk group, but may also be used in early testing of well babies. There appears to be no substitute for a high index of suspicion for this disease; early detection may prevent the mental retardation certain to ensue in undiagnosed cases. (R. Allen, Amer J Public Health, November 1960)

Serum Factor in Schizophrenic Patients. Significant steps have been made in the separation of a factor in the serum of schizophrenic patients. However, the significance of this factor for schizophrenic illness has not yet been clarified. This may be a substance normally present in the serum of all individuals, but quantitatively elevated in the schizophrenic because of excessive production or its failure to be metabolized or detoxified. On the other hand, this may be a qualitatively abnormal substance characteristic of schizophrenia. (C. Frohman, et al, Amer J Psychiat, November 1960)

Varidase and Epididymitis. Study of 105 consecutive cases of nontuberculous epididymitis revealed that treatment employing the combination of varidase and broad spectrum antibiotic yields the best results. Parenzyme, in combination with antibiotic, aided in resolution of the disease, but to a lesser degree than varidase and resulted in a slower decrease of epididymal induration. (D. McClellan, et al, J Urol, November 1960)

Lymphosarcoma. A review has been completed of the experience with 1269 patients with lymphosarcoma at Memorial Center for Cancer and Allied Diseases. The frequency of a leukemic transition was noted in 7.6%; the over-all 5-year survival rate from clinical onset was 28.4%; the median survival from clinical onset was 26.4 months. The absolute level of circulating lymphocytes was seen to serve as a valuable indication of prognosis; the lower the level, the shorter the survival. It was the conclusion that radiation therapy remains the treatment of choice, and that no increase in survival can be demonstrated over a period of 25 years, despite addition of antibiotics, steroids, and alkylating agents to the therapeutic program of conventional radiation therapy. (S. Rosenberg, et al, Ann Int Med, November 1960)

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DENTAL**SECTION**

Adaptation of Restorative Materials

Considerable research has been devoted to investigating the adaptation of dental restorations to cavity walls. These studies have included not only a comparison of various common restorative materials but also the effects of variables, such as the age of the restoration, thermal changes, and techniques for insertion. Although it would appear that the roughness of the cavity wall might have an effect on the adaptation of many restorative materials, little consideration has been given to this factor. It has been demonstrated that different types of instrumentation produce variations in the texture of the tooth structure; only one investigation—limited to amalgam and gold inlay restorations—has been concerned with the possible relationship between the surface condition of the cavity wall and the sealing properties of the material.

Preliminary studies were carried out to determine the methods of instrumentation that would produce widely different degrees of cavity roughness. Microscopic examination of many specimens revealed that an ultrasonic device consistently produced cavity walls of a smoother texture than did any of the other instruments employed. By comparison, a No. 558 carbide bur rotating at 250,000 rpm resulted in extremely rough and irregular cavity-wall surfaces. A third degree of roughness approximately midway between these two was attained by use of a No. 558 carbide bur with conventional speed rotary equipment (5000 rpm). Repeated cuts made by these three methods revealed that these surfaces could be consistently reproduced.

Five different materials—amalgam, silicate, an autopolymerizing resin, cohesive gold foil, and mat gold foil—were placed in cavities having the three different types of cavity walls described above.

The amalgam was triturated mechanically and condensed by a mechanical condenser. Restorations were polished 24 hours after insertion with care being taken to avoid excess heat.

Silicate cement was mixed on a cool slab for a maximum of 30 seconds. Pressure was applied with a celluloid strip for 3 minutes after insertion of the material. Upon removal of the strip, cocoa butter was applied. Fifteen minutes later the excess was carefully removed with a fine-grit, cuttle-fish disk and the restoration again coated with cocoa butter. The restorative resin was introduced into the cavity preparation by the flow technic. The cavity liner

supplied by the manufacturer was employed with this material; final finish of the restoration was carried out 24 hours after insertion.

Both the cohesive and the noncohesive mat gold were condensed with a magnetic condenser.

Following placement of the restorations, the teeth were placed in water and stored at 37 C. Since there is evidence that the adaptation of certain materials is influenced by the age of the restoration, tests for leakage were made at intervals of 48 hours, 30 days, and 90 days.

The relative adaptation of the restorations was determined by the amount of radioisotope that infiltrated at the margin between the cavity walls and the filling material during a given period of time. The teeth were sealed, except for the restoration and the area immediately surrounding it, with a combination of fingernail polish and tin foil. They were then placed in the radioactive solution for 2 hours. Upon removal from the isotope the sealing material was stripped away and the surfaces were carefully scrubbed with detergent and water. Longitudinal sections, parallel to the long axis of the tooth, were made through the restorations in order to expose the cavity margins. The teeth were allowed to remain in contact with x-ray film for 24 hours; the film was then processed.

Measurement of the area infiltrated by the isotope was done by mounting the autoradiographs between glass and projecting the images onto pieces of drawing paper mounted on a vertical board. A microscope stage micrometer was modified for use on a slide projector making it possible to adjust the distance between the projector and the drawing paper so that the autoradiographs were enlarged exactly 50 times. With a very sharp pencil the areas of infiltration were outlined on the paper. The projected images revealed a sharp line of delineation around the leakage areas. In evaluating materials, such as silicate where the filling material itself was penetrated by the isotope, it was, of course, necessary to differentiate between the phenomenon and true marginal leakage. However, this could readily be done on the projected images.

A variation existed in the amount of leakage which occurred for individual specimens within each experimental group. The standard deviation was calculated for each series.

Results of this study indicate that the surface condition of the cavity wall is an important consideration in the complex problem of marginal leakage of dental restorations. In assessing the sealing properties per se of any restorative material, it is evident that the texture of the cavity preparation must be considered and controlled. Failure to control this variable may well be partially responsible for some of the divergent results obtained by different investigators.

Since all five restorative materials consistently exhibited better sealing properties when placed in a rough-textured cavity, it can only be assumed that the irregularities of the cavity walls provide for better retention of the restorative material.

Although there is no actual clinical evidence that leakage of the magnitude demonstrated in this investigation contributes to recurrent caries, considerable research effort is being expended to find means of securing better adaptation of dental restorations. These tests have shown that adaptation of restorative materials can be improved by use of cavity liners, altered manipulative technics, and chemical treatment of the tooth surface. The results of this investigation indicate that modification of the cavity wall by mechanical means should be added to this list.

The experiments demonstrated that rough-surfaced cavity walls markedly improved the resistance of mat-gold, cohesive gold-foil, amalgam, and silicate restorations to marginal leakage. Although results with resins were not so pronounced, the same trend was consistently observed. (C. Menegale, M. L. Swartz, R. W. Phillips. Department of Dental Materials, Indiana University School of Dentistry, Indianapolis, Ind. Adaptation of Restorative Materials as Influenced by Roughness of Cavity Walls. J D Res 30: 825-835, July - August 1960)

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Aspirin and Its Dosage

Acetylsalicylic acid is perhaps the most used drug in modern life. In spite of this, its pharmacology is either unknown or baffling in its simplicity. To some patients, aspirin is a miracle worker; to others it is a drug which is used in great quantities without much effect. The secret is in the dosage. In the author's opinion, the most potent analgesic dose is a small one in the region of 0.3 gm (one tablet).

There are two possible explanations. As with potassium iodide, doubling the dose may decrease the effect, perhaps by encouraging elimination of the drug. Aspirin has two actions, both being analgesic and antipyretic. If the pain is inflammatory, the antipyretic action will increase the pain by increasing the blood supply to the inflamed parts.

Aspirin has lately been coming back into favor. It is used extensively in chronic rheumatism and is held to have a cortisone-like effect. The author has found that 0.3 gm of aspirin three times daily is effective in the treatment of chronic rheumatism and osteoarthritis. Most patients benefit from a reduction in the dosage from 0.6 gm to 0.3 gm. (W.A. Ball, Petworth, Sussex, England. Dental Abstracts, 5:3, March 1960)

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The young man knows the rules, but the old man knows the exceptions.

—Oliver Wendell Holmes

Occlusal Equilibration of Complete Dentures -
New Available Slide Lecture

Occlusal Equilibration of Complete Dentures, the fourth in a series of slide lectures prepared by the U.S. Naval Dental School, National Naval Medical Center, Bethesda, Md., is now available for loan on a short-term basis. This study set consists of 59 35 mm colored slides, a bound narration in lecture form, hand viewer, and carrying case. Ten sets are available.

Other slide lectures prepared by the Naval Dental School are (1) Mouth Preparation for Removable Partial Dentures, (2) Remount Technique for Occlusal Correction of Complete Dentures, and (3) Diagnosis for Complete Dentures. In addition, a pathology course, Non-Neoplastic Oral Lesions, is available for individual home study. This latter course consists of 25 microscopic slides together with a booklet which gives the clinical history, microscopic description, and diagnosis of each slide. The loan of any of the study sets may be obtained by submitting a letter of request in the following form:

From: (name, rank, full address)

To: Commanding Officer (Code 7)
 U. S. Naval Dental School
 National Naval Medical Center
 Bethesda 14, Md.

Subj: Illustrated lecture; request for loan of

1. It is requested that I be granted the loan of the illustrated lecture _____ for approximately two weeks.
2. It is requested that the period of the loan commence on or about _____ 1961, to expire not later than two weeks from date of receipt.
3. I will exercise due care in handling and stowing this training material and will return it in the original carton with the enclosed franked address labels attached at the expiration of loan period.

(Signature)

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Personnel and Professional Notes

Inspector General, Dental, Redesignated. About 1 January 1961, the Inspector General, Dental, RADM C. C. DeFord DC USN, who is currently Special Assistant to the Chief of the Bureau of Medicine and Surgery, will be reassigned to the Dental Division where he will serve as Special Assistant to the Chief of

the Dental Division. This reassignment is in conformance with provisions of Public Law 284 which states that the Dental Division is responsible for conducting dental inspections and surveys. The billet of Deputy Chief of the Dental Division will be redesignated Assistant Chief of the Dental Division.

Reassignments. RADM E. G. F. Pollard was recently relieved as Commanding Officer, U. S. Naval Dental School, NNMC, Bethesda, Md., by CAPT A. R. Frechette, formerly Deputy Chief of the Dental Division, Bureau of Medicine and Surgery. RADM Pollard is now Director of Dental Activities, Fifth Naval District with additional duties as Commanding Officer, U. S. Naval Dental Clinic, Norfolk, Va.; Staff Dental Officer, U. S. Naval Base, Norfolk, Va.; and Dental Reserve Program Officer.

CAPT R. S. Snyder Jr assumes duties as Deputy Chief of the Dental Division with his previous assignment as Head, Planning and Analysis Branch of the Bureau being assumed by CAPT G. O. Stead.

CAPT G. L. Parke leaves the Norfolk billet assumed by RADM Pollard to relieve CAPT F. M. Kyes as Senior Dental Officer, Administrative Command, U. S. Naval Training Center, Great Lakes, Ill. CAPT Kyes in turn relieves RADM D. W. Ryan as District Dental Officer, Ninth Naval District, the latter having recently retired after more than 35 years of active duty.

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RESERVE



SECTION

Reserve Terminology

"Sir: The law says one must be a member of a 'Reserve Component' in order to qualify for retirement; does this mean I must be a member of a drilling unit? I must be in an 'Active Status' to qualify for promotion. What, exactly, does this mean? What is the difference between a Reservist who is 'attached' to a unit and one who is 'associated' with a unit?"

Do these questions seem elementary? Nevertheless, in letters, many offices are frequently called upon to define terms used in everyday operations of the Naval Reserve. This "unofficial dictionary" may be of help.

Active Duty—This is full-time duty on board a ship or station, other than active duty for training.

Active Duty for Training (ACDUTRA)—This is full-time active duty for training purposes, most commonly the two-week cruise.

Special ACDUTRA—Active duty for training in excess of 14 days, but not to exceed 90 days, is known as Special ACDUTRA.

Group ACDUTRA—This may be performed in addition to, but not in place of, the regular annual 14 days training period authorized for members of the Selected Reserve. Pay is not authorized for this type of training; it is not necessary to secure advance approval from the Chief of Naval Personnel.

Active Status—All Ready Reservists and those Standby Reservists who are not on the Inactive Status Lists are considered to be in an active status.

Active Status Pool—All Naval Reserve personnel in an active status who are not on active duty, not members of a drilling unit, and who are not on the Inactive Status List, are members of the active status pool.

Allowance. The number of personnel by grade and designator or rating authorized to be assigned to Selected Reserve units of the Naval Reserve in drill pay billets is the "allowance" for these units.

Anniversary Year—For Reservists who entered the Navy before 30 June 1949, the anniversary year will be from 1 July to 30 June—or the same as the fiscal year.

For those members entering after 30 June 1949—or whose Reserve service was broken after that date—the anniversary year extends from the date of entry or reentry, for the purpose of computing a satisfactory year.

Appropriate Duty—This duty is assigned by naval district commanders to carry out special tasks in connection with the Naval Reserve.

Associate Quota—This is the number of billets authorized for a unit in addition to its allowance, for training, administrative, or procurement support purposes.

Associated. Any Reservist who is assigned to a billet within an authorized unit associate quota is "associated" with that unit.

Attached—Any Reservist who is assigned to a billet within an authorized allowance is "attached" to that unit.

Attrition—The primary means by which the Navy maintains a balanced officer grade structure. To provide the rank pyramid necessary to meet mobilization requirements, officers with long service who have not been selected for promotion are removed from the rank pyramid to create promotion opportunities for other Naval Reserve officers.

Categories of Reservists—Every Reservist is either in the Ready, Standby, or Retired category.

Inactive Duty Training—Any training, instruction, or duty, as prescribed by SecNav, performed by Reservists on inactive duty, with or without compensation is inactive duty training. For example, drills and approved correspondence courses are part of this type of training.

Partial Mobilization—This is the limited expansion of the active forces through the selective recall to active duty of individual Reservists and organized units. Normally, only Ready Reservists will be ordered to active duty in a partial mobilization.

Promotion Point—This is a numerical unit awarded for the successful completion of a defined portion of an approved training program for the purpose of establishing eligibility for promotion.

Promotion points are awarded for ACDUTRA, drill attendance, correspondence and NROS courses, and the like.

Ready Reserve—This includes all Reservists who are liable for active duty either in time of war or national emergency, declared by Congress or the President, or when otherwise authorized by law. Only Ready Reservists may receive pay for taking part in inactive duty training.

Reserve Component—Each branch of the Armed Forces has its own Reserve component; the Naval Reserve is the Navy's Reserve component. As a member of the USNR, you are a member of the Navy's Reserve component regardless of whether your participation consists of active duty, drills, active duty for training, correspondence courses, or whether you don't take part in any training program.

Retired Reserve—Reservists who are on the Retired Lists, according to regulations established by the Secretary of the Navy, are liable to be ordered to active duty involuntarily only in time of war or national emergency declared by Congress. A roundup of retirement information is contained in the November 1959 issue of The Naval Reservist.

Retirement Point—This is a unit used to credit an individual for participation in Naval Reserve training and active duty for use in determining eligibility for retirement benefits.

Satisfactory Year of Federal Service—Effective 30 June 1949, the accumulation of a minimum of 50 retirement points in an anniversary year is considered a "satisfactory year of Federal service" for retirement purposes.

Selected Reserve—Those forces needed immediately at the commencement of hostilities involving the U.S.; normally, Selected Reserve units would not be recalled for partial mobilization or for limited emergencies unless hostilities are involved. Selected Reserve units are "pay units."

Specialist Reserve—Formerly designated as "nonpay programs," units of the Specialist Reserve cover a wide field of activity. See The Naval Reservist, March 1960, for a survey of Specialist Reserve programs.

Standby Reserve—These Reservists are liable for active duty only in time of war or national emergency declared by Congress or when otherwise authorized by law.

Status of Reservists—Every Reservist shall be in an active, inactive, or retired status.

Team Training—This is intended to provide Reservists with training in general knowledge and skills required of all Navymen on active duty. It is not intended to be limited to general drill or battle problem exercises, but to teach seamanship, damage control, first aid, and so on.

Temporary Active Duty—This is a temporary assignment to full-time active duty for the purpose of performing a special task.

Total Mobilization—This is the expansion of the active forces to full wartime strength through the general recall of all Naval Reservists.
(The Naval Reservist, November 1960)

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Tissue Bank Training Course

A two-week course in Tissue Bank Training will convene on 3 April 1961 at the Naval Medical School, NNMC, Bethesda, Md. This course provides orientation in the operation and administration of a tissue bank. It includes indoctrination in the methods of tissue procurement, storage and dispensing, tissue culture, tissue chemistry, processing excised tissue, and allied short and long-term research projects in tissue culture and tissue chemistry fields. It also includes indoctrination in medico-legal aspects of homotransplantation, the procedure for obtaining permission for tissue donations, familiarization with the operation of the Tissue Bank Registry, and other associated administrative practices.

Inactive Naval Reserve Medical Corps officers except those residing in the 10th, 14th, 15th, and 17th Naval Districts, are eligible for this course. BOQ facilities are limited and available on a first-come, first-served basis. Security clearance is not required. Interested, eligible Medical officers should submit their requests for active duty for training to their respective commanders at least 60 days in advance of the convening date.

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PREVENTIVE MEDICINE

Decline of Plague

M. Baltazard, Déclin et Destin d'une Maladie Infectieuse: la Peste (Decline and Future of an Infectious Disease: Plague), Bull WHO, 23: 247-262, 1960.

The author sums up results obtained over a period of 12 years by the Institut Pasteur de l'Iran additional to those previously obtained by the Institut Pasteur du Maroc, and endeavors to give a picture of the present plague situation in the light of researches conducted.

The present decline of plague is an indication not of its final disappearance, but merely of the end of the modern pandemic period originally brought about by introduction of the steamship. Man has, however, at last succeeded in preventing the rat from crossing the oceans. At the same time, plague has lost those of its positions which were only temporary—most recently India and Java—but it retains those where biologic conditions have favored its permanent implantation; it is now firmly rooted in many parts of the world. While man is able to hold the disease in check, it can still erupt overwhelmingly wherever health organizations are weak or upset by a breakdown of the international order which has been so patiently built up in this field.

Introduction of the disease into a healthy area by the rat can only occur where *Rattus rattus* exists. The subsequent epizootic will be brief if *R. rattus* is alone and can only become prolonged if *R. norvegicus* is also present. Plague can find a foothold only where it can establish itself in wild or field rodents. This foothold will be only temporary if too low a resistance and too high a mortality among these rodents prevent the infection remaining in the same place and compel it to creep incessantly into new areas. On the other hand, the disease will persist indefinitely in places where there are species sufficiently resistant to permit formation of inveterate foci, where a balance by the infection is reached between resistant and susceptible species.

Plague can become epidemic only when there is interhuman transmission by human ectoparasites. This is shown by existence in the Middle East of plague epidemics in the absence of rats, and the nonepidemic nature of the disease in India despite the presence of rats and *Xenopsylla cheopis* in numbers never reached in any country or at any time. The great slaughter caused by plague in olden days was all due to transmission by human ectoparasites, but the duration of the epidemics must have been dependent on existence of a large murine background. Indeed, if any proof of presence of *R. rattus* in the ancient world is required, it is supplied by the very existence of plague. Outbreaks in antiquity were exactly similar to the type of plague studied and described in Morocco. The term "anademic" is proposed to designate the addition of human cases caused by bites of rat-fleas as opposed to the rapid multiplication of cases in the epidemic. Endemic plague exists only in fixed, inveterate foci of wild plague. Epidemic plague, whether pulmonary or bubo-septicemic, originates from one or the other of these forms.

Plague remains more than ever an international problem. As in the case of yellow fever, areas where conditions favor entry and spread of the disease should be defined as "receptive areas." "Critical areas" would include inveterate foci and their ports, while "immune areas" would be those where conditions do not allow either entry or spread of the infection. Priority should be given to detection and delimitation of "critical areas," designation of "infective ports" through which plague can pass from its foci in the interior to the high seas, and to study of the links between these areas and the

mainland communication systems. Eradication of such foci should be systematically carried out. The surveillance of receptive areas should be reinforced to prevent invasion similar to those of the past which the unchanged conditions in most of these areas make possible at any time. The immediate elimination of plague at any point it invades is a matter of international concern which should be taken into consideration at once in the drafting of mutual assistance agreements.

Suppression of plague, both in its wild endemic foci and in places temporarily invaded, and the protection of man against "anademics" as well as against epidemics should be possible. By means of modern residual insecticides, this could be accomplished by merely destroying the vector ectoparasites in burrows, houses, and clothing.

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Effect of Desiccation on Staphylococcus Pyogenes

N.A. Hinton, J.R. Maltman, J.H. Orr, Department of Bacteriology, Queen's University, Kingston, Ontario, Canada. The Effect of Desiccation on the Ability of Staphylococcus Pyogenes to Produce Disease in Mice. Amer J Hyg, 72:343-350, November 1960.

The ease with which pathogenic staphylococci may be isolated from articles and materials in the environment has tended in recent years to produce a strong antiseptic flavor in those parts of hospital practice designed to control cross-infection. Efficient methods of decontamination and control of the bacterial population of floors, dust, and air are clearly of basic importance in any wound infection control program.

However, there seems to be a tendency to concentrate on microbial contamination of the environment almost to the exclusion of human sources of direct contact. Further, the numbers of staphylococci isolated from the environment are commonly taken as an efficient direct measure of the relative hazard involved in different areas of a hospital. In a previous study, using in vitro tests, the authors have shown that a given population of staphylococci will suffer a significant decrease in viable count when subjected to desiccation on glass under conditions designed to mimic, in a general way, natural air drying. The cells which survive this process exhibit evidence of sublethal damage.

When compared to fresh organisms, the dried cells demonstrated longer lag periods, a decreased capacity to survive reconstitution in various fluids including human serum, and a decreased rate of coagulase production. It would seem not unreasonable to believe that the sum of these effects would be manifest as the decreased capacity of dried cells to survive, implant, multiply, and produce disease in susceptible tissues. The concern of the

authors' present study was to test this hypothesis in terms of various types of experimental infection in mice.

The cells which survived a form of exposure designed to mimic natural air drying were shown in a previous in vitro study to have suffered a degree of sublethal damage. This damage has been demonstrated to be manifest in decreased virulence for mice by intramuscular, intravenous, and intracerebral methods of testing.

The significance of these findings has been discussed in relation to the epidemiology of staphylococcal disease. For any given strain of *Staphylococcus pyogenes*, it is suggested that the organisms which reach susceptible tissues after short periods of residence in the environment and those organisms transmitted by more or less direct contact retain most effectively their infective potential. Measures directed against these organisms must not be neglected.

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Tests in Diagnosis of Syphilis

N.J. Fiumara, Director, Division of Venereal Diseases, Massachusetts Department of Public Health, Boston, Mass. Treponemal Tests in Diagnosis of Syphilis and Biologic False Positive Reactors. Public Health Rep, 75: 1011-1019, November 1960.

The Division of Venereal Diseases of the Massachusetts Department of Public Health made a study of 703 patients who had persistently positive blood Hinton tests and who had no historical, physical, or epidemiologic evidence of syphilis according to protocols submitted by their physicians. Each of these patients represented a diagnostic problem to the private or clinic physician and a treponemal test was indicated.

When the *Treponema pallidum* immobilization (TPI) and the Reiter protein complement fixation (RPCF) tests were positive, the diagnosis of syphilis could be confirmed. When an RPCF test was negative, the physician was advised to have his patient have a TPI test. If both tests were negative, the patient could be classified as a biologic false positive (BFP) reactor with a few reservations. The sensitivities of the TPI and the RPCF tests were compared with the sensitivity of the Hinton tests in the various stages of untreated syphilis.

On the basis of all available data, including the treponemal tests, 548, or 78%, of the 703 diagnostic problem patients were found to be infected; 155 (22%) were BFP reactors. Approximately 70% of the white and 96% of the nonwhite patients had syphilis. The infection rate was about 85% in clinic patients and 63% in private patients. More cases of syphilis were discovered in both men and women who were married or who had been married than in single persons.

In these diagnostic problem cases, with the exception of white patients aged 15 to 19 years, the number of cases of syphilis discovered increased up to age 45 when the infection rate tended to level off. Of practical interest was the sharp increase in BFP reactions in white patients of 15 to 19 years.

More syphilis was found in the larger cities; the highest rate was in Boston, the largest city in the study area. Areas in Boston and elsewhere in the State which have a higher syphilis prevalence also showed a higher infection rate among these diagnostic problem cases. This was reflected in the number of syphilis cases in the hospitals drawing their patients from these areas.

When the 155 patients with BFP reactions were studied to correlate their highest dilution serologic titers with their diagnoses, it was found that only one had a positive dilution titer of 1:16; all others had lower positive titers. This coincides with the experience of physicians that, generally speaking, patients with BFP reactions have low-titer serologic titers. Many exceptions can be found, however.

Results of this study indicate strongly that the reagin tests are still valuable in the diagnosis of syphilis. Even when diagnostic problems arise, almost 80% of patients with a persistently positive blood reagin test have or have had syphilis. For this reason, such patients must be considered to be syphilitic until proved otherwise. Today, a diagnosis of BFP should not be made in Massachusetts without the benefit of the RPCF test as a screening device, and if this test is negative, the TPI test should be performed. Only when both treponemal tests are negative can the diagnosis of biologic false positive reaction be entertained in a patient with a persistently positive reagin blood test.

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Prophylactic Isoniazid for Nurses

B.A. Dormer, M.M. Wood. Prophylactic Isoniazid for Nurses in a Tuberculosis Hospital. *The Lancet*, 2: 837-840, October 15, 1960.

Non-European nurse aides were first appointed to the staff of the King George V Hospital for Tuberculosis, London, England, in 1946. From May 1946 through December 1958 nearly 1900 nurse aides were employed; 83% were tuberculin-positive on appointment. Over 80% of nurses who were tuberculin-negative on appointment and who did not receive BCG became tuberculin-positive within a year after appointment. There was no significant difference in incidence of disease developing among groups that were tuberculin-negative or tuberculin-positive on appointment. It is interesting that 75% of the cases among the group that was tuberculin-negative on appointment did not develop until 13 months to 5 years after skin test conversion. In 1950,

those nurses who had remained tuberculin-negative were given BCG; gradually, those who were tuberculin-negative on appointment also received BCG. This program apparently had little effect in reducing the tuberculosis rates and was discontinued in 1955.

In September 1955, isoniazid prophylaxis was introduced. All nurses received INH, 300 mgm daily in a single dose, and no cases of tuberculosis were detected until April 1958 when one case was discovered; three additional cases occurred in 1959. Thus, of approximately 600 nurses who received isoniazid prophylactically, four developed tuberculosis. With INH prophylaxis, the incidence of tuberculosis has fallen irrespective of tuberculin sensitivity on appointment. Prophylactic INH has benefited both tuberculin negative and tuberculin positive nurses.

An anonymous questionnaire revealed that the faithfulness with which daily medication was taken varied inversely with the time; this factor may partially explain the three cases occurring in 1959.

Tubercle bacilli recovered from three of the nurses who developed tuberculosis after a period of INH prophylaxis, showed various degrees of isoniazid resistance in vitro and virulence for guinea pigs. These same nurses responded satisfactorily to treatment with INH or its derivatives, and streptomycin with or without PAS.

Isoniazid prophylaxis is completely effective in babies. It is less certain in adults who can choose not to take it, but it is worthwhile in a group of people where the incidence of exposure to tuberculosis infection is high.

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Quarantinable Diseases

The Committee on International Quarantine meets annually to review the functioning of the International Sanitary Regulations and their effect on international travel. This year's meeting was held in Geneva from 17 to 22 October 1960.

The Committee noted that, although there has been a decline in the incidence of the six quarantinable diseases in the past 4 years—with a corresponding reduction in mortality—there has been little change in their distribution throughout the world.

Cholera, which is usually present only in East Pakistan and some parts of India, appeared in Burma, West Pakistan, and Afghanistan in 1960. For more than 30 years this disease has been confined to Asia except for the 1947 epidemic in Egypt. Deaths from cholera in India and Pakistan have been steadily declining over the past 15 years.

Many foci of wild rodent plague still persist in Asia, Africa, and the Americas, so that there is constant danger that the disease may spread to rats in villages and towns. The annual average number of deaths from plague

dropped from 170,300 in the years 1919 - 1928 to less than 200 in 1954 - 1958. In 1959, a total of only 83 deaths was registered in ten countries.

The main focus of smallpox is still India and Pakistan which in 1958 accounted for 218,000 cases out of the world total of 242,000, and in 1959 for 50,000 cases out of a total of 74,000. More than any other disease, smallpox is liable to be imported—especially by air—into countries normally free from it. This occurred several times during the past year.

In spite of increasing air traffic, yellow fever has not spread outside its usual foci in Africa and America. It exists principally as jungle yellow fever which affects monkeys and is rarely contracted by man. The annual incidence is now low, although an epidemic occurred at the end of 1959 in parts of Ethiopia and in the Blue Nile and Upper Nile Provinces of the Sudan where at least 118 cases and 87 deaths from the disease were notified.

Contrary to general belief, typhus is not regressing in Africa where Ethiopia is now the principal focus. In the Americas, the situation is constantly improving; the number of cases dropped from 25,000 a year in 1946 - 1950 to 7500 in 1956 - 1960. There has also been a constant decline in the incidence of the disease in Asia since the end of the Second World War.

Introduction of modern insecticides has made it an easy matter to prevent relapsing fever which is transmitted by lice and ticks. There have been two doubtful cases in the Americas and hardly any in Asia since 1957. Although the number of cases in Africa seems to be on the increase, the disease does not constitute a serious health problem there except in Ethiopia. (WHO Chronicle, Notes, 14: 481, December 1960)

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Procurement of 70 mm Chest Films on File

The Bureau receives many requests for 70 mm chest photofluorograms from field activities. The rolls of 70 mm film are forwarded from the field directly to:

Head, Navy Branch
Military Personnel Records, G.S.A.
9700 Page Boulevard
St. Louis 14, Mo.

Therefore, if 70 mm chest films of military personnel or their dependents or of civilian employees are desired, a request directed to the above St. Louis address will save considerable time. In requesting a film, the name, service or badge number, date of birth and birthplace, film number, date of examination, and identity of the photofluorographic unit performing the chest x-ray examination should be supplied. (Tuberculosis Control Section, PrevMedDiv)

Preventive Medicine Briefs

Water-Borne Shigella Gastroenteritis. A water-borne outbreak of *Shigella* gastroenteritis is described. An estimated 500 persons were ill in a town of 1600. *Shigella flexneri* 6, Manchester variety, was the etiologic agent. In a 25% survey sample, 396 persons were included. Of this number, 131 had been ill. Symptoms were abrupt in onset and varied widely in severity. Stool specimens were obtained from 218 individuals; 16% were positive for *S. flexneri* 6. Among those with positive cultures, 71% had been ill.

Attack rates by source of water clearly implicated the city water supply as the common vehicle for the *Shigella*. *S. flexneri* 6 was not isolated from the water, but heavy coliform contamination was demonstrated during the outbreak. The city water supply received no treatment before use. *Escherichia coli* were serotyped for 60 individuals with negative results for a common serotype. Known enteropathogenic serotypes 0:86 and 0:111 were associated with 3 cases of gastroenteritis.

Acute *Shigella* gastroenteritis in a population living under good sanitary conditions was characterized by brief duration, lack of fatalities, and few carriers when compared to current cases. This is in sharp contrast to endemic shigellosis with its longer duration, high mortality rate in the group under 2 years old, and carrier-to-case ratio of 9:1. Possible mode of introduction of *Shigella* into the water supply was discussed. The few previously described, well documented outbreaks of water-borne *Shigella* gastroenteritis were contrasted with the present outbreak. (R.H. Drachman, et al. An Outbreak of Water-Borne *Shigella* Gastroenteritis, *Amer J Hyg*, 72: 321-334, November 1960)

Current Look at Venereal Diseases. Knowledge and skills are available to reduce syphilis and gonorrhea to the point where public defenses need be nominal if strong measures are applied within the next few years. However, action must be taken promptly to prevent the recent increase of venereal disease from becoming seeded in the population.

Syphilis remains a public health problem of major and increasing proportions. Reported cases of infections of syphilis have increased alarmingly since 1957. It is estimated that the true annual incidence of syphilis is 60,000 cases; approximately 1,225,000 untreated cases exist in this country. Nearly 15% of these untreated luetics will eventually require hospitalization for complications that will cost almost a billion dollars.

Clearly, syphilis is not under control. Technics of diagnosis and treatment have been developed almost to the ultimate, but epidemiology has lagged behind. A vigorous case-finding program must be conducted to find infected persons and to bring them to treatment faster than their infection can spread. (Public Health Rep, November 1960)

Virus Isolated from Cat Scratch Disease. A virus has been demonstrated by hemagglutination of rabbit and rat red cells in allantoic fluids from chick embryos inoculated with pus from human cases of cat scratch disease. An inhibitor was present in these fluids which prevented the demonstration and was inactivated or removed by treatment of the fluids with 0.28 m glucose. Another inhibitor which was removed by acetone and hydrochloric acid was present in all rabbit sera so far examined and in most human sera.

Hemagglutinin-inhibiting antibody was demonstrated in antisera to the agent; in sera of some human cases of the disease; and in antiserum to herpes simplex virus after treatment to remove inhibitor. Allantoic fluid inhibitor also masked the antigenicity of the virus in rabbits. The virus is antigenically related to herpes simplex, but even after passage was not virulent for chick embryos; it was not cytopathogenic in tissue cultures; and it did not produce lesions after inoculation onto rabbit cornea. (W. Turner, et al, Hemagglutinating Virus Isolated from Cat Scratch Disease. J Bact, 80:430-435, October 1960)

Postsurgical Staphylococcic Infection. A most interesting and thoroughly documented report of an outbreak of postsurgical staphylococcic infections is reported. (A. J. Nahmias, et al, JAMA, November 5, 1960)

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